Five Misconceptions about Teaching Math and Science

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Science, technology, engineering, and math (STEM) education is critical in the high-tech global marketplace that has replaced the industrial economy. Unfortunately, American students perform poorly on international assessments of math and science knowledge. In 2005, Bill Gates said, "When I compare our high schools to what I see when I'm traveling abroad, I am terrified for our workforce of tomorrow."

One challenge to reforming our educational system is that politicians and voters think they know what's wrong with American schools—after all, they went through the system themselves. But some of those common-sense opinions are simply wrong, and these false assumptions undermine much of the public debate about how to improve education.

1. American schools have deteriorated in the past 30 or 40 years, as demonstrated by our poor performance on international assessments of math and science achievement. We need to restore American elementary and secondary education to their previous glory.

Incorrectly believing that American students used to excel hampers our reform efforts. It makes the challenge of improving STEM education seem easier than it is.

2. If a student performs poorly, it's because she doesn't have the aptitude for math and science.

Aptitude has been overrated as a factor in achievement. Hard work and practice are more important.

3. Curriculum reform is the key to higher achievement in math and science.

Better that your child should be taught by an exciting, creative teacher using an outdated text than by a boring or hostile teacher using the latest curriculum.

4. OK, well-prepared teachers are important. We need a massive recruiting drive to attract the top college graduates into teaching.

The problem, however, is not recruiting people into teaching. The problem is *keeping* them in teaching. Teachers work very hard. They are not paid enough. They endure great stress daily. These factors drive many out of the profession. A study by the National Education Association found that the five year dropout rate for new teachers is 50 percent.

5. Only the top students should consider becoming math and science teachers. No C students allowed.

Excellent teaching requires more than simply possessing knowledge. You have to know how to communicate this knowledge. You have to remember what it was like not to understand the concept. This is why, sometimes, C students can teach others better than A students. They remember their initial confusion as they struggled to master the concept. The A students “got it” immediately and often have a hard time relating to students who don’t get it.